

Refine Search

Search Results -

Terms	Documents
L1 same (coupl\$3 near5 selectively)	27

Database:

US Pre-Grant Publication Full-Text Database
US Patents Full-Text Database
US OCR Full-Text Database
EPO Abstracts Database
JPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Search:

L2

Refine Search

Recall Text

Clear

Interrupt

Search History

DATE: Wednesday, October 19, 2005 [Printable Copy](#) [Create Case](#)

Set Name Query

side by side

*DB=PGPB,USPT,USOC; PLUR=YES; OP=OR***Hit Count Set Name**

result set

L2 L1 same (coupl\$3 near5 selectively) 27 L2L1 ((first or second or third) adj1 bus) same multiplex\$3 681 L1

END OF SEARCH HISTORY

Refine Search

Search Results -

Terms	Documents
L2	0

Database:

- US Pre-Grant Publication Full-Text Database
- US Patents Full-Text Database
- US OCR Full-Text Database
- EPO Abstracts Database
- JPO Abstracts Database
- Derwent World Patents Index
- IBM Technical Disclosure Bulletins

Search:

L3

Refine Search

Recall Text

Clear

Interrupt

Search History

DATE: Wednesday, October 19, 2005 [Printable Copy](#) [Create Case](#)

Set Name Query
side by side

Hit Count Set Name
result set

DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR

L3 L2

0 L3

DB=PGPB,USPT,USOC; PLUR=YES; OP=OR

L2 L1 same (coupl\$3 near5 selectively)

27 L2

L1 ((first or second or third) adj1 bus) same multiplex\$3

681 L1

END OF SEARCH HISTORY

Refine Search

Search Results -

Terms	Documents
L2	0

Database:

US Pre-Grant Publication Full-Text Database
 US Patents Full-Text Database
 US OCR Full-Text Database
 EPO Abstracts Database
 JPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Search:

L3

Refine Search

Recall Text

Clear

Interrupt

Search History

DATE: Wednesday, October 19, 2005 [Printable Copy](#) [Create Case](#)

Set Name Query

side by side

DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR

L3 L2

DB=PGPB,USPT,USOC; PLUR=YES; OP=OR

L2 L1 same (coupl\$3 near5 selectively)

L1 ((first or second or third) adj1 bus) same multiplex\$3

Hit Count Set Name

result set

0 L3

27 L2

681 L1

END OF SEARCH HISTORY



Welcome United States Patent and Trademark Office

Search Results

[BROWSE](#)[SEARCH](#)[IEEE XPLORE GUIDE](#)[SUPPORT](#)

Results for "((multiplex* <in>metadata) <and> (config* <in>metadata))<and> (bus<in>..."

Your search matched 21 of 1247812 documents.

A maximum of 100 results are displayed, 25 to a page, sorted by **Relevance** in **Descending** order.
[e-mail](#) [print](#) [friendly](#)

» Search Options

[View Session History](#)[New Search](#)

Modify Search

☐ Check to search only within this results set

 Display Format: ☒ Citation ☐ Citation & Abstract

» Key

IEEE JNL IEEE Journal or Magazine

IEEE JNL IEE Journal or Magazine

IEEE CNF IEEE Conference Proceeding

IEEE CNF IEE Conference Proceeding

IEEE STD IEEE Standard

Select Article Information

- ☐ 1. **Interconnect delay aware RTL Verilog bus architecture generation for an SoC**
 Kyeong Keol Ryu; Talpasanu, A.; Mooney, V.J., III; Davis, J.A.;
 Advanced System Integrated Circuits 2004. Proceedings of 2004 IEEE Asia-Pacific Conference on
 4-5 Aug. 2004 Page(s):176 - 179
 Digital Object Identifier 10.1109/APASIC.2004.1349441
[AbstractPlus](#) | Full Text: [PDF](#)(432 KB) IEEE CNF
- ☐ 2. **IEEE standard for a simple 32-bit backplane bus: NuBus**
 ANSI/IEEE Std 1196-1987
 8 Aug. 1988
[AbstractPlus](#) | Full Text: [PDF](#)(4340 KB) IEEE STD
- ☐ 3. **The fiber-optic high-speed data bus for a new generation of military aircraft**
 Uhlhorn, R.W.;
 LCS, IEEE [see also IEEE LTS]
 Volume 2, Issue 1, Feb. 1991 Page(s):36 - 45
 Digital Object Identifier 10.1109/73.80439
[AbstractPlus](#) | Full Text: [PDF](#)(1132 KB) IEEE JNL
- ☐ 4. **Optical passive bus for broadband user-network interface**
 Iguchi, K.; Amemiya, S.; Soejima, T.; Murano, K.;
 Subscriber Loops and Services, 1988. Proceedings, ISSLS 88., International Symposium on
 11-16 Sept. 1988 Page(s):235 - 239
 Digital Object Identifier 10.1109/ISSLS.1988.10665
[AbstractPlus](#) | Full Text: [PDF](#)(372 KB) IEEE CNF
- ☐ 5. **An architecture of optical passive bus for broadband CPN (customer premises network)**
 Amemiya, S.; Takeo, H.; Tezuka, K.; Iguchi, K.;
 Global Telecommunications Conference, 1989, and Exhibition. 'Communications Technology for the 1990s and Beyond'.
 GLOBECOM '89., IEEE
 27-30 Nov. 1989 Page(s):1647 - 1654 vol.3
 Digital Object Identifier 10.1109/GLOCOM.1989.64224
[AbstractPlus](#) | Full Text: [PDF](#)(576 KB) IEEE CNF
- ☐ 6. **IEEE standard for futurebus+- logical protocol specification**
 IEEE Std 896.1-1991
 10 March 1992
[AbstractPlus](#) | Full Text: [PDF](#)(11428 KB) IEEE STD
- ☐ 7. **Optical multiple-access mesh-connected bus interconnects**
 Yao Li; Lohmann, A.W.; Pan, Z.G.; Rao, S.B.; Redmond, I.; Ting Wang;

Proceedings of the IEEE
Volume 82, Issue 11, Nov. 1994 Page(s):1690 - 1700
Digital Object Identifier 10.1109/5.333747

[AbstractPlus](#) | Full Text: [PDF](#)(1052 KB) IEEE JNL



8. A New Phase-Locked Oscillator Adaptable to Input Signals with Periodical Phase Jumps

Okumura, Y.; Hayashi, K.; Inoue, Y.;
Communications, IEEE Transactions on [legacy, pre - 1988]
Volume 35, Issue 12, Dec 1987 Page(s):1366 - 1373

[AbstractPlus](#) | Full Text: [PDF](#)(736 KB) IEEE JNL



9. Development of an advanced 32-bit airborne computer

Feinreich, B.; Wagner, S.; Robbins, W.;
Aerospace and Electronics Conference, 1990. NAECON 1990., Proceedings of the IEEE 1990 National
21-25 May 1990 Page(s):133 - 139 vol.1
Digital Object Identifier 10.1109/NAECON.1990.112755

[AbstractPlus](#) | Full Text: [PDF](#)(700 KB) IEEE CNF



10. Reduced switching delay in wavelength division multiplexed two-dimensional multiple-plane optical interconnections using multiple-wavelength VCSEL arrays

Leight, J.E.; Willner, A.E.;
Lightwave Technology, Journal of
Volume 14, Issue 6, June 1996 Page(s):1467 - 1479
Digital Object Identifier 10.1109/50.511676

[AbstractPlus](#) | [References](#) | Full Text: [PDF](#)(1292 KB) IEEE JNL



11. The T11-matching hardware to software

Tye, C.;
Eurocard Computers - A Solution to Low Cost Control?, IEE Colloquium on
29 Sep 1989 Page(s):5/1 - 5/3

[AbstractPlus](#) | Full Text: [PDF](#)(124 KB) IEEE CNF



12. Fiber optics for military aircraft flight systems

Figueroa, L.; Hong, C.S.; Huggins, R.W.; Miller, G.E.; Popoff, A.A.; Porter, C.R.; Smith, D.K.; Van Deventer, B.;
LCS, IEEE [see also IEEE LTS]
Volume 2, Issue 1, Feb. 1991 Page(s):52 - 65
Digital Object Identifier 10.1109/73.80441

[AbstractPlus](#) | Full Text: [PDF](#)(1384 KB) IEEE JNL



13. Arrayed-waveguide grating multiplexer with loop-back optical paths and its applications

Tachikawa, Y.; Inoue, Y.; Ishii, M.; Nozawa, T.;
Lightwave Technology, Journal of
Volume 14, Issue 6, June 1996 Page(s):977 - 984
Digital Object Identifier 10.1109/50.511597

[AbstractPlus](#) | [References](#) | Full Text: [PDF](#)(904 KB) IEEE JNL



14. The design of Mars lander cameras for Mars Pathfinder, Mars Surveyor '98 and Mars Surveyor '01

Reynolds, R.O.; Smith, P.H.; Bell, L.S.; Keller, H.U.;
Instrumentation and Measurement, IEEE Transactions on
Volume 50, Issue 1, Feb. 2001 Page(s):63 - 71
Digital Object Identifier 10.1109/19.903879

[AbstractPlus](#) | [References](#) | Full Text: [PDF](#)(200 KB) IEEE JNL



15. FPGA-based SAT solver architecture with near-zero synthesis and layout overhead

Zhong, P.; Martonosi, M.; Ashar, P.;
Computers and Digital Techniques, IEE Proceedings-
Volume 147, Issue 3, May 2000 Page(s):135 - 141
Digital Object Identifier 10.1049/ip-cdt:20000482

[AbstractPlus](#) | Full Text: [PDF](#)(644 KB) IEEE JNL



16.

LOTTERYBUS: a new high-performance communication architecture for system-on-chip designs

Lahiri, K.; Raghunathan, A.; Lakshminarayana, G.;
Design Automation Conference, 2001. Proceedings
2001 Page(s):15 - 20

[AbstractPlus](#) | Full Text: [PDF](#)(760 KB) IEEE CNF



17. The study of SDH STM-1 add-drop multiplexer architecture

Chia-Wen Lin; Wen-Hsien Hsu; Chang-Ching Wu; Shih-Chun Wang;
Singapore ICCS '94. Conference Proceedings.

Volume 1, 14-18 Nov. 1994 Page(s):177 - 181 vol.1

Digital Object Identifier 10.1109/ICCS.1994.474082

[AbstractPlus](#) | Full Text: [PDF](#)(248 KB) IEEE CNF



18. A readout unit for high rate applications

Toledo, J.; Bal, F.; Dominguez, D.; Guirao, A.; Miller, H.;

Nuclear Science, IEEE Transactions on

Volume 49, Issue 2, Part 1, April 2002 Page(s):448 - 454

Digital Object Identifier 10.1109/TNS.2002.1003771

[AbstractPlus](#) | [References](#) | Full Text: [PDF](#)(303 KB) IEEE JNL



19. Single chip H.32X multimedia communication processor with CIF 30f/s MPEG4/H.26X bi-directional codec

Minegishi, N.; Motoyama, N.; Takagi, M.; Ogawa, F.; Shibata, K.; Goda, N.; Akiyoshi, K.; Kamemaru, T.; Asano, K.;

Solid-State Circuits Conference, 2001. ESSCIRC 2001. Proceedings of the 27th European

18-20 Sept. 2001 Page(s):129 - 132

[AbstractPlus](#) | Full Text: [PDF](#)(216 KB) IEEE CNF



20. Demonstration of an add-drop network node with time slot access for high-speed WDMA dual bus/ring packet networks

Chan, C.K.; Tong, F.; Chen, L.K.; Cheung, K.W.;

Optical Fiber Communication Conference and Exhibit, 1998. OFC '98., Technical Digest

22-27 Feb. 1998 Page(s):62 - 64

Digital Object Identifier 10.1109/OFC.1998.657206

[AbstractPlus](#) | Full Text: [PDF](#)(284 KB) IEEE CNF



21. Building blocks for super highways

Pedersen, F.H.;

Broadcasting Convention, 1995. IBC 95., International

14-18 Sep 1995 Page(s):284 - 289

[AbstractPlus](#) | Full Text: [PDF](#)(264 KB) IEEE CNF





AbstractPlus

4 View Search Results | 4 Previous Article | Next Article

Access this document

Full Text: EDE (1292 KB)

Download this citation

Choose Citation

Download EndNote, ProCite, RefMan

Learn More

Rights & Permissions



Learn More

Home | Login | Logout | Access Information | Alerts | Sitemap | Help

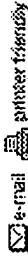
Welcome United States Patent and Trademark Office

BROWSE

SEARCH

IEEE Xplore GUIDE

SUPPORT



Reduced switching delay in wavelength division multiplexed two-dimensional multiple-plane optical interconnections using multiple-wavelength VCSEL arrays

Leight, J.E., Wilner, A.E.

Dept. of Electr. Eng. Syst., Univ. of Southern California, Los Angeles, CA, USA;

This paper appears in: **Lightwave Technology, Journal of**

Publication Date: June 1996

Volume: 14, Issue: 6

On page(s): 1467 - 1479

ISSN: 0733-8724

CODEN: JLTEDG

INSPEC Accession Number: 5319069

Digital Object Identifier: 10.1109/50.511676

Posted online: 2002-08-06 20:29:52.0

Abstract

We calculate the expected number of internodal hops for a network established with a wavelength division multiplexed (WDM) two-dimensional (2-D) multiple-plane optical interconnection. This WDM optical interconnection incorporates WDM pixels consisting of multiple-wavelength vertical-cavity surface-emitting laser (VCSEL) arrays and wavelength-selective detectors. The WDM interconnection can support simultaneous and reconfigurable communication among a network of nodes. Using the expected number of hops as a measure of intermodal switching delay, we show that the integration of WDM into the interconnection results in a significantly reduced delay as compared to single-wavelength systems. Substantial delay reduction results even when the number of wavelengths is small relative to the number of 2-D planes. We analyze the bus, dual-bus, and ring architectures since they define the means of communication between pixels. For each architecture, we analyze three configurations which provide each node access to (i) an entire plane of pixels, (ii) a row (or column) of pixels, or (iii) an individual pixel. When each network node has access to an entire plane of pixels, the proposed WDM interconnection incurs substantially shorter delay than single-wavelength optical interconnections. By allowing a node to access an entire row or column of pixels, the interconnection benefits from the incorporation of spatial division multiplexing (SDM) and the number of nodes connected can grow substantially, with negligible added delay. Finally, when a node can access only a single pixel, a large number of independent processors can be interconnected exhibiting far less switching delay than other electronic or optical interconnections of comparable size

Index Terms
Inspection

Controlled Indexing

computer networks laser cavity resonators optical fibre subscriber loops optical interconnections photonic switching systems semiconductor lasers surface emitting lasers wavelength division multiplexing

Non-controlled Indexing

2D multiple-plane optical interconnection WDM WDM optical interconnection WDM pixels delay reduction individual pixel internodal hops internodal switching delay multiple-wavelength VCSEL arrays multiple-wavelength

vertical-cavity surface-emitting laser arrays, optical interconnections, reduced switching delay, ring architectures, single-wavelength optical interconnections, single-wavelength systems, spatial division multiplexing, wavelength division multiplexed two-dimensional multiple-plane optical interconnections, wavelength-selective detectors

Author Keywords

Not Available

References

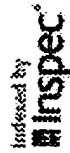
- 1 H. S. Hinton, "Photonics in switching," *IEEE LTS*, pp. 26-35, Aug. 1992.
Abstract | Full Text: PDF (1276KB)
- 2 M. R. Feldman, S. C. Esener, C. C. Guest, and S. H. Lee, "Comparison between optical and electrical interconnects based on power and speed considerations," *Appl. Opt.*, vol. 27, pp. 1742-1751, May 1, 1988.
- 3 A. Yariv, "The beginning of integrated optoelectronic circuits," *IEEE Trans. Electron Devices*, vol. ED-31, pp. 1656-1661, Nov. 1984.
- 4 J. W. Goodman, F. J. Leonberger, S. Y. Kung, and R. A. Athale, "Optical interconnections for VLSI systems," *Proc. IEEE*, vol. 72, pp. 850-886, July 1984.
- 5 C. A. Brackett, "Dense wavelength division multiplexing networks: Principles and applications," *IEEE J. Select. Areas Commun.*, vol. 8, pp. 948-964, Aug. 1990.
Abstract | Full Text: PDF (1564KB)
- 6 I. P. Kaminow, "FSK with direct detection in optical multiple-access FDM networks," *IEEE J. Select. Areas Commun.*, pp. 1005-1014, Aug. 1990.
Abstract | Full Text: PDF (892KB)
- 7 A. Dickinson and M. E. Prise, "Free-space optical interconnection scheme," *Appl. Opt.*, vol. 29, no. 14, pp. 2001-2005, May 10, 1990.
- 8 A. D. Norte, A. E. Willner, W. Shieh, and A. R. Tanguay Jr., "Multiple-layer optical interconnections using through-wafer hollow dielectric-waveguide vias," *IEEE Photon. Technol. Lett.*, vol. 6, pp. 851-854, July 1994.
Abstract | Full Text: PDF (312KB)
- 9 A. E. Willner, C. J. Chang-Hasnain, and J. E. Leight, "2-D WDM optical interconnections using multiple-wavelength VCSEL's for simultaneous and reconfigurable communication among many planes," *IEEE Photon. Technol. Lett.*, vol. 5, no. 7, pp. 838-841, July 1993.
Abstract | Full Text: PDF (352KB)
- 10 C. J. Chang-Hasnain, J. P. Harbison, C. E. Zah, M. W. Maeda, L. T. Florez, N. G. Stoffel, and T. P. Lee, "Multiple wavelength tunable surface-emitting laser arrays," *IEEE J. Quant. Electron.*, vol. 27, pp. 1368-1376, June 1991.
Abstract | Full Text: PDF (912KB)
- 11 T. P. Lee and T. Li, "Photodetectors," *Optical Fiber Telecommunications*, S. E. Miller and A. G. Chynoweth, Ed. Orlando, FL: Academic, pp. 593-626, 1979.
- 12 T. P. Lee, J. C. Campbell, K. Ogawa, A. R. McCormick, A. G. Dentai, and C. A. Burnus, "Dual-channel 1.5 Mb/s lightwave receiver employing an InGaAsP wavelength-demultiplexing detector," *Electron. Lett.*, vol. 15, pp. 388-389, 1979.
- 13 J. E. Leight, S. Homan, A. E. Willner, G. Giaretta, M. Li, and C. J. Chang-Hasnain, "Experimental demonstration of reconfigurable and simultaneous wavelength-division-multiplexed multiple-plane optical interconnections," *IEEE Photon. Technol. Lett.*, vol. 8, no. 2, Feb. 1996.
Abstract | Full Text: PDF (352KB)
- 14 H. S. Hinton, J. R. Erickson, T. J. Cloonan, and G. W. Richards, "Space-division switching," *Photonics in Switching*, J. E. Midwinter, Ed. San Diego, CA: Academic, vol. II, pp. 119-167, 1993.
- 15 A. S. Acampora, M. J. Karol, and M. G. Hluchyj, "Terabit lightwave networks: The multihop approach," *AT&T Tech. J.*, vol. 66, no. 6, pp. 21-34, Nov./Dec. 1987.

- 16 K.Hwang, *Advanced Computer Architecture*, New York: McGraw-Hill, pp. 93, 1993.
- 17 N. F. Maxemchuk, "The Manhattan street network," *Proc. GLOBECOM'85* New Orleans, LA, pp. 255-261, Dec. 1986.
- 18 N. F. Maxemchuk, "Regular mesh topologies in local and metropolitan area networks," *AT&T Tech. J.*, vol. 64, no. 7, pp. 1659-1686, Sept. 1985.
- 19 G. E. Myers and M. El Zarki, "Routing in TAC—A triangularly-arranged network," *Proc. INFOCOM'90* Silver Spring, MD, pp. 481-486, 1990.
[Abstract](#) | [Full Text](#) [PDE](#) (532KB)
- 20 T. H. Cormen, C. F. Leiserson, and R. L. Rivest, *Introduction to Algorithms* Cambridge, MA: M.I.T. Press, pp. 550-578, 1992.

Citing Documents

- 1 Multiaccess processor interconnection using subcarrier and wavelength division multiplexing, Chen-Ken Ko, Sy-Yen Kuo
Lightwave Technology, Journal of
On page(s): 228-241, Volume: 15, Issue: 2, Feb 1997
[Abstract](#) | [Full Text](#) [PDE](#) (400)
- 2 A performance and implementation comparison of bidirectional and dual bus 2-D WDM multiple-plane optical interconnections with row-column multihop network structures, Jason Jongjin Yoo, Willner, A. E.
Lightwave Technology, Journal of
On page(s): 801-809, Volume: 19, Issue: 6, Jun 2001
[Abstract](#) | [Full Text](#) [PDE](#) (272)

[View Search Results](#)
[Previous Article](#)
[Next Article](#)



[Help](#)
[Contact Us](#)
[Privacy & Security](#)
[IEEE.org](#)
 © Copyright 2005 IEEE - All Rights Reserved